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I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO: COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450, ON THE DATE INDICATED BELOW.

BY: Cenue-Conte

Date: April 21, 2005

MAIL STOP AMENDMENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Patent Application Of:	:		
Hisaaki Gyoten et al.	:		
Conf. No.:	5187	Group Art Unit:	1745
Appln. No.:	10/069,900	Examiner:	Raymond Alejandro
Filing Date:	February 26, 2002	Attorney Docket No.:	10059-410US (P23466-01)
Title:	POLYMER ELECTROLYTIC FUEL CELL		

REQUEST FOR RECONSIDERATION

This is in response to the Office Action dated January 21, 2005 (Paper No. 20050115) in the above-identified patent application. This response is being timely filed by April 21, 2005.

Claims 1 and 4 are presently pending in the application.

The Examiner has rejected claim 1 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,607,785 of Tozawa et al. in view of U.S. Published Patent Application US 2002/0034672 of Saito et al. ("Saito '672"), further in view of U.S. Patent 6,348,279 of Saito et al. ("Saito '279"), and further in view of U.S. Patent 6,030,552 of Ambros et al. In addition, the Examiner has rejected claim 4 under 35 U.S.C. § 103(a) as being unpatentable over the above combination of references, further in view of Japanese Published Patent Application JP 11-126620 (JP '620). Except for the discussion of Ambros et al., the Examiner's comments and grounds for the rejections of claims 1 and 4 are substantially identical to those set forth in the previous Office Action dated May 14, 2004. Applicants have fully discussed these references and grounds for rejection in the Amendments dated July 30, 2004 and November 15, 2004, and those Remarks will not be repeated herein, but are incorporated by reference.

At pages 7-9 of the Office Action, the Examiner acknowledges that none of the preceding references (Tozawa et al., Saito '672, Saito '279 or JP '620) discloses the specific particle diameter of the vitreous carbon powder. However, the Examiner argues that Ambros et al. disclose powdery vitreous carbon and a paste made therefrom for producing resistive films having predetermined electrical conductivity, with the powdery vitreous carbon having a grain size of less than 10 μm or 8 μm and being admixed with an electrically non-conductive component (resin). The Examiner further contends that Ambros et al. envisage the formation of electrically conductive film made of vitreous carbon powder, and argues that the disclosed particle size of Ambros et al. must inherently have a specific surface area of less than 100 m^2/g .

The Examiner concludes that it would have been obvious to one skilled in the art to use the vitreous carbon powder having the specific particle diameter of Ambros et al. in the resin layer of the separator of the combination of Tozawa et al., Saito '672 and Saito '279, because Ambros et al. disclose the use of vitreous carbon powder to make various films exhibiting various conductivities, and that the powder is suitable for producing paste having predetermined electrical conductivity and a resistive film made from the paste. The Examiner's alleged motivation for this combination is that Ambros et al. concentrate on the same problem of providing suitable electrical conductive film made of vitreous carbon powder for electrically conductive applications, so that the references are pertinent to one another and within Applicants' field of endeavor. These rejections are respectfully but strenuously traversed for the reasons set forth in detail below.

Applicants vehemently object to the Examiner's action in attempting to combine Ambros et al. with the other three or four prior art references of record. This is a classic hindsight rejection which is clearly improper and must be withdrawn. It is obvious that when Applicants amended claim 1 in the Amendment dated November 15, 2004 to specify a range of mean particle diameter for the vitreous carbon powder, the Examiner went out to find a prior art reference disclosing vitreous carbon powder disclosing a particle size within the claimed range. The Examiner did not limit his search to polymer-electrolyte fuel cells or related devices, but searched far outside the area of fuel cell technology (note the considerably different International and U.S. search classifications on the face of Ambros et al., compared to those in the fuel cell art, as represented, for example on the face of Tozawa et al. and Saito '279).

It is evident from a reading of Ambros et al. that this reference has nothing whatsoever to do with fuel cells or electroconductive separators for an electrolyte membrane-electrode assembly. Instead, Ambros et al. is directed to a method for producing a vitreous carbon in powder form to make a paste in admixture with an electrically non-conductive component to form a resistive film. The only application of this resistive film disclosed in Ambros et al. is for integrated circuits having a predetermined electrical conductivity, where the paste is screen printed on an electrically non-conductive substrate (see column 1, lines 29-37 and column 4, lines 27-29 of Ambros et al.).

In contrast, as presently claimed, the electroconductive resin layer containing the vitreous carbon powder having a specific surface area and mean particle diameter is applied to a metal (i.e., conductive) substrate contacting the electrolyte membrane-electrode assembly. This claimed structure has no relation to a polymer-film integrated circuit comprising a resistive layer with electrically conductive and non-conductive film components applied to an electrically non-conductive substrate.

The Examiner argues that there is motivation for the combination because Ambros et al. and the present invention concentrate on the same problem of providing suitable electrical conductive films made of vitreous carbon powder for electrically conductive applications. However, that is much too broad a field, and one skilled in the fuel cell art would not have looked to the general field of integrated circuits and resistive films for solving the problems of the present invention. The Examiner's attempt to relate Ambros et al. to the fuel cell art is pure hindsight.

In particular, Ambros et al. show no recognition of the problems or solutions to which the present invention is directed, particularly the relationship between particle diameter (and specific surface area) of vitreous carbon and the problem of moisture permeability. Thus, unlike the resin layer of Ambros et al., the electroconductive resin layer as presently claimed comprises a resin having at least one of water-repellant and basic radicals. This resin layer alleviates the problem of corrosion of the metal substrate inside the separator, resulting in decreased contact resistance and excellent electroconductivity. Since Ambros et al. has nothing whatsoever to do with an electroconductive separator having a metal substrate for use inside a fuel cell, there is no recognition of this problem or any teaching of the solution according to the present invention.

The non-obviousness of the present invention is further evidenced when one considers the level of knowledge among those skilled in the art at the time the present invention was made. Thus, it was generally recognized among those skilled in the art that the application of a paste including vitreous carbon to an electroconductive separator for a fuel cell was difficult, because sufficient electroconductivity could not be obtained by merely applying such a paste to an electroconductive separator. The present Applicants found, according to the claimed invention, a way of obtaining sufficient electroconductivity with a vitreous carbon-containing paste applied to a specific separator, namely an electroconductive separator including a metal substrate within the fuel cell. Again, there is no recognition of this problem in Ambros et al. or any suggestion of Ambros et al. which would lead to the solution of the present invention.

In sum, Ambros et al. is absolutely silent on any issue of moisture permeability of an electroconductive film and is absolutely indifferent to the relationship between particle diameter and specific surface area of vitreous carbon and moisture permeability. The Examiner's tactic of repeatedly pointing out that Ambros et al. is related to electrical conductivity of vitreous carbon materials and vitreous carbon having a similar particle size does not make up for the requirement that one skilled in the art must be motivated to look to the potentially combined reference for a teaching relevant to the claimed invention. In this case, Ambros et al. is totally lacking in any teaching or suggestion relevant to the specific usage of the paste as claimed in the present application. Therefore, the attempted combination of Ambros et al. (which has no relation to fuel cells) with the remaining prior art references (all of which are directed to fuel cells, and particularly fuel cell separators) is totally improper and should be withdrawn.

Application No. 10/069,900
Reply to Office Action of January 21, 2005

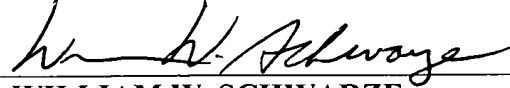
In view of the above Remarks, reconsideration and withdrawal of the rejections and an early Notice of Allowance are respectfully solicited.

Respectfully submitted,

HISAAKI GYOTEN ET AL.

April 21, 2005
(Date)

By:



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